

MARKED UP VERSION OF AMENDED CLAIMS

7. (once amended) The system of claim [6] 25, wherein said pump flowpath includes a sight window oriented to enable visual contact with said drip chamber.

8. (once amended) The system of claim [6 further comprising an outlet tube positioned beneath said flow restriction in said drip chamber separated from said flow restriction by a drip gap] 25, wherein said outlet tube is configured to revert said drip stream exiting said flow restriction to a reverted continuous stream.

25. (twice amended) A medication delivery system comprising:

a) an infusion pump including,

a fluid storage chamber for storing fluid medication,

a displacement piston displacably positionable to expand or contract said fluid storage chamber,

an elastic member transitionable between a more stressed position and a less stressed position to displace said displacement piston, [and]

a pump outlet for discharging a fluid from said infusion pump in response to displacement of said displacement piston,

a pump flowpath providing fluid communication between said fluid storage chamber and said pump outlet, wherein said pump flowpath has a flow restriction and a drip chamber with a drip chamber wall, an upper portion, and a lower portion, and wherein said flow restriction is sized to convert a continuous stream of a fluid entering said flow restriction from said fluid storage chamber to a drip stream exiting said flow restriction into said drip chamber, and

an outlet tube positioned beneath said flow restriction in said lower portion of said drip chamber and extending toward said upper portion, said outlet tube having a smaller cross section than said drip chamber to define a fluid accumulation space between said outlet tube and said drip chamber wall where at least some of said fluid exiting said flow restriction into said drip chamber accumulates; and

b) a bolus injector positioned downstream of said fluid storage chamber in fluid communication with said fluid storage chamber, said bolus injector including,
a flexible bladder,

a bolus chamber enclosed by said flexible bladder,
an injector inlet into said bolus chamber, and
an injector outlet from said bolus chamber.

26. (once amended) A medication delivery system comprising:

- a) an infusion pump including,
 - a fluid storage chamber for storing fluid medication,
 - a displacement piston displaceably positionable to expand or contract said fluid storage chamber,
 - an elastic member transitionable between a more stressed position and a less stressed position to displace said displacement piston, [and]
 - a pump outlet for discharging fluid from said infusion pump in response to displacement of said displacement piston,
 - a pump flowpath providing fluid communication between said fluid storage chamber and said pump outlet, wherein said pump flowpath has a flow restriction and a drip chamber with a drip chamber wall, an upper portion, and a lower portion, and wherein said flow restriction is sized to convert a continuous stream of a fluid entering said flow restriction from said fluid storage chamber to a drip stream exiting said flow restriction into said drip chamber, and
 - an outlet tube positioned beneath said flow restriction in said lower portion of said drip chamber and extending toward said upper portion, said outlet tube having a smaller cross section than said drip chamber to define a fluid accumulation space between said outlet tube and said drip chamber wall where at least some of said fluid exiting said flow restriction into said drip chamber accumulates; and
- b) a bolus injector positioned in series with said infusion pump including,
 - a flexible bladder,
 - a bolus chamber enclosed by said flexible bladder,
 - an injector inlet into said bolus chamber and connected to said pump outlet, and
 - an injector outlet from said bolus chamber.

27. (once amended) A medication delivery system comprising:

- a) an infusion pump including,
 - a fluid storage chamber,
 - a displacement piston displaceably positionable to expand or contract said fluid storage chamber,
 - an elastic member transitionable between a more stressed position and a less stressed position to displace said displacement piston,
 - a first pump outlet for discharging fluid from said infusion pump in response to displacement of said displacement piston, [and]
 - a second pump outlet for discharging fluid from said infusion pump in response to displacement of said displacement piston,
 - a pump flowpath providing fluid communication between said fluid storage chamber and said first pump outlet, wherein said pump flowpath has a flow restriction and a drip chamber with a drip chamber wall, an upper portion, and a lower portion, and wherein said flow restriction is sized to convert a continuous stream of a fluid entering said flow restriction from said fluid storage chamber to a drip stream exiting said flow restriction into said drip chamber, and
 - an outlet tube positioned beneath said flow restriction in said lower portion of said drip chamber and extending toward said upper portion, said outlet tube having a smaller cross section than said drip chamber to define a fluid accumulation space between said outlet tube and said drip chamber wall where at least some of said fluid exiting said flow restriction into said drip chamber accumulates; and
 - b) a bolus injector in fluid communication with said fluid storage chamber including,
 - a flexible bladder,
 - a bolus chamber enclosed by said flexible bladder,
 - an injector inlet into said bolus chamber and connected to said second pump outlet, and
 - an injector outlet from said bolus chamber.
28. (once amended) A medication delivery system comprising:
- a) a first infusion pump including,

a first fluid storage chamber,

a first displacement piston displacably positionable to expand or contract said first fluid storage chamber, [and]

a first elastic member transitionable between a more stressed position and a less stressed position to displace said first displacement piston, and

a first pump outlet for discharging fluid from said first infusion pump in response to displacement of said first displacement piston;

b) a second infusion pump including,

a second fluid storage chamber,

a second displacement piston displacably positionable to expand or contract said fluid storage chamber,

a second elastic member transitionable between a more stressed position and a less stressed position to displace said second displacement piston, [and]

a second pump outlet for discharging fluid from said second infusion pump in response to displacement of said second displacement piston,

a pump flowpath providing fluid communication between said first fluid storage chamber and said first pump outlet, wherein said pump flowpath has a flow restriction and a drip chamber with a drip chamber wall, an upper portion, and a lower portion, and wherein said flow restriction is sized to convert a continuous stream of a fluid entering said flow restriction from said first fluid storage chamber to a drip stream exiting said flow restriction into said drip chamber, and

an outlet tube positioned beneath said flow restriction in said lower portion of said drip chamber and extending toward said upper portion, said outlet tube having a smaller cross section than said drip chamber to define a fluid accumulation space between said outlet tube and said drip chamber wall where at least some of said fluid exiting said flow restriction into said drip chamber accumulates; and

c) a bolus injector positioned in series with said second infusion pump including,

a flexible bladder,

a bolus chamber enclosed by said flexible bladder,
an injector inlet into said bolus chamber and connected to said second
pump outlet, and
an injector outlet from said bolus chamber.

29. (once amended) A medication delivery system comprising:

a) an infusion pump including,
a fluid storage chamber for storing fluid medication,
a displacement piston displacably positionable to expand or contract
said fluid storage chamber,
an elastic member transitionable between a more stressed position
and a less stressed position to displace said displacement piston,
a pump outlet for discharging a fluid from said infusion pump in
response to displacement of said displacement piston, and

a pump flowpath providing fluid communication between said fluid
storage chamber and said pump outlet, said pump flowpath including a flow
restriction, a drip chamber, a sight window, and an outlet tube, wherein said
drip chamber has a drip chamber wall, an upper portion, and a lower portion,
said flow restriction exiting into said drip chamber and said outlet tube
positioned beneath said flow restriction in said drip chamber separated from
said flow restriction by a drip gap, said sight window oriented to enable visual
contact with said drip chamber, wherein said flow restriction is sized to
convert a continuous stream of fluid entering said flow restriction from said
fluid storage chamber to a drip stream exiting said flow restriction into said
drip chamber and wherein said outlet tube extends toward said upper
portion, said outlet tube having a smaller cross section than said drip
chamber to define a fluid accumulation space between said outlet tube and
said drip chamber wall where at least some of said fluid exiting said flow
restriction into said drip chamber accumulates [is configured to convert said
drip stream exiting said flow restriction to a reverted continuous stream]; and

b) a bolus injector positioned downstream of said fluid storage chamber in
fluid communication with said fluid storage chamber, said bolus injector including,
a flexible bladder,

a bolus chamber enclosed by said flexible bladder,
an injector inlet into said bolus chamber, and
an injector outlet from said bolus chamber.

ADDITIONAL CLAIM AMENDMENTS

Cancel claims 1, 6, and 18 without prejudice.

Add new claims 31-34 as follows:

31. The system of claim 26, wherein said outlet tube is configured to revert said drip stream exiting said flow restriction to a reverted continuous stream.

32. The system of claim 27, wherein said outlet tube is configured to revert said drip stream exiting said flow restriction to a reverted continuous stream.

33. The system of claim 28, wherein said outlet tube is configured to revert said drip stream exiting said flow restriction to a reverted continuous stream.

34. The system of claim 29, wherein said outlet tube is configured to revert said drip stream exiting said flow restriction to a reverted continuous stream.

REMARKS

Claims 1, 3-10, 17, 18 and 25-30 were pending in the above-captioned patent application at the time of the Final Office Action. The Final Office Action maintains the rejection of all pending claims on prior art grounds. In response to the rejection, applicant respectfully requests amendment of claims 7, 8 and 25-29, cancellation of claims 1, 6, and 18, and addition of new claims 31-34. Allowance of pending claims 3-5, 7-10, 17, and 25-34 is respectfully requested in view of the above-recited amendments and the arguments set forth below.

Rejections Under 35 U.S.C. §103

Claims 1, 3-10, 25, 26, 29 and 30 have been rejected under 35 U.S.C. §103(a) as being unpatentably obvious over U.S. Patent 4,623,330 to Laby et al. in view of U.S. Patent 5,505,707 to Manzie et al. All pending independent claims 25-29 have been amended to incorporate the limitations of previously amended claim 6 with respect to the pump flowpath and claim 6 has correspondingly been canceled. Independent claims 25-29 have been

further amended to recite specific structure in the drip chamber of the pump flowpath, which is neither disclosed nor suggested by the prior art of record. In particular, the drip chamber is recited as having a drip chamber wall, an upper portion, and a lower portion.

The outlet tube is positioned beneath the flow restriction in the lower portion of the drip chamber and extends toward the upper portion of the drip chamber. The outlet tube has a smaller cross section than the drip chamber to define a fluid accumulation space between the outlet tube and the drip chamber wall where at least some of the fluid exiting the flow restriction into the drip chamber accumulates.

The newly recited structure enables the outlet tube to revert the drip stream exiting the flow restriction to a reverted continuous stream, if desired, by acting as a sluice. The fluid in the fluid accumulation space overflows into the outlet tube under the force of gravity alone to form the reverted continuous stream. None of the cited references contain this teaching.

Although Manzie et al. recites structure which could arguably achieve the same result as the present claimed invention, i.e., a compressible tube (32) with an inlet (33) and an outlet (58) at opposite ends, applicant's claimed structure for reverting the flow is distinct. As such, applicant's device reverts the flow in a different manner than Manzie et al., i.e., by gravity rather than compression. Accordingly, it is respectfully submitted that all independent claims 25-29 and their pending dependent claims traverse the instant ground of rejection.

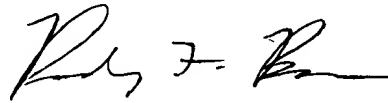
Claims 17, 18, 27, and 28 have been rejected under 35 U.S.C. §103(a) as being unpatentably obvious over U.S. Patent 6,247,995 to Bryan in view of U.S. Patent 5,505,707 to Manzie et al. It is respectfully submitted that remaining pending claims 17, 27, and 28 traverse the instant ground of rejection for substantially the same reasons as set forth above.

The remaining prior art references made of record and not relied upon have been considered by applicant, but are not deemed sufficient to render the instant pending claims unpatentably obvious.

Conclusion

In conclusion, applicant respectfully asserts that all pending claims 3-5, 7-10, 17, and 25-34 in the instant patent application are allowable for the reasons set forth above. Accordingly, an early notice of allowance is earnestly solicited. The Examiner is requested to call the undersigned at (858) 272-8705 for any reason that would advance the instant application to issue.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Rodney F. Brown", written in a cursive style.

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